APPENDIX C

Federal *Content Standards for Digital Geospatial Metadata (CSDGM)*

Some EMPACT project developers have a high degree of technical sophistication in the generation of geospatial data and use of appropriate tools for creation of this data. These developers can greatly extend the value of their project by generating metadata that conforms to the CSDGM standard. A useful primer on metadata, published by the National States Geographic Information Council, is available at *www.lic.wisc.edu/metadata/metaprim.htm*. Many tools are available to assist in the creation of CSDGM compliant metadata. Metadata creation tools are described in the following section of this Appendix.

The CSDGM builds on the Government Information Locator Service (GILS), an electronic public resource which identifies information resources throughout the federal government, describes the information available in these resources, and provides assistance in obtaining that information. CSDGM provides more precise searching for maps and other data referenced to places on the Earth. CSDGM was developed by the FGDC in conformance with Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: the National Spatial Data Infrastructure." The objectives of the standard are to provide a common set of terminology and definitions for the documentation of digital geospatial data.

The standard addresses the information required by a prospective user to determine the availability of a set of geospatial data, to determine the fitness of the set of geospatial data for an intended use, to determine the means of accessing the set of geospatial data, and to successfully transfer the set of geospatial data. As such, the standard establishes the names of data elements and compound elements to be used for these purposes, the definitions of these data elements and compound elements, and information about the values that are to be provided for the data elements.

Metadata Creation Tools

Metadata tools may be categorized based on their operating characteristics and function as one of the following four types: Intelligent, Forms-based, Text template, or Utility[1]. Each of these is described below.

Intelligent

These tools extract some information from spatial data sets without the user having to determine it and then separately record it. Examples in this category are: data dictionary (aml), document (aml), fgdcmeta (aml), blmdoc (aml), metalite (aml), and findarc.

Forms-based

These tools provide a user interface which helps guide the user throughout the documentation process. Typically a series of forms with fill in boxes or pick lists is central to the tool. Some of these tools indicate which are the optional and mandatory elements and have on-line help. Several of these are built on the framework of a database which makes it easy to recycle portions of metadata which may repeat between data sets. This category has the most representatives and includes: NOAA FGDC Metadata Toolkit, Metamaker 2.10, xtme, Corpsmet 1.02, Oklahoma Metadata Creator, The MDC (Metadata Collector), DataLogr 1.0, Metamorph, BIC Metadata Form, Corpsmet95, Data set Cataloger 4.0, Metadata Lite Entry Form, Metadata ManagementSystem, Meta Data Manager Professional 2.0, Metagen32, NOAA FGDC Metadata Toolkit 1.0 Beta, and KMDD (Klamath Metadata Dictionary)

ASCII and word processor templates

These are not metadata tools per se; instead an existing text editor and word processor is used to edit these template documents which contain all or most of the possible metadata elements and to add text to those elements that are appropriate. Unneeded or empty elements are deleted, repeating elements must be copied and pasted repeatedly. ASCII templates are simple to use, require no GIS software or other specialized software, and may be cloned for parts of the metadata which are common to several data sets. A major drawback for templates is that there is

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[1]NSGIC Metadata Primer, http://www.lic.wisc.edu/metadata/metaprim.htm#MP_4_3

no built in control of the structure; in the process of cutting and pasting it is easy to damage the structure of the template so it is no longer CSDGM compliant. There are a number of representative templates around in various word processor and ASCII forms.

Utilities

This category includes tools and services which are not used for the primary production of metadata, but rather are used to process it in some form. In that category there are tools to find data sets (findarc), to pre-process metadata into consistent format (cns), and to validate metadata (mp and the Metadata Validation Service, mp's on-line counterpart).

Table 3.3 - List of Tools for Creating Metadata by Platform

GIS/Platform/OS	Metadata Tool
UNIX with Arc/Info	blmdoc (aml), data dictionary (aml), document (aml), fgdcmeta (aml) 1.1, metalite (aml) Beta 1.8, findarc
UNIX, Linux	cns, mp, mdc, Oklahoma metadata creator, xtme
MS-Windows	NOAA FGDC Metadata Toolkit 1.0 Beta, Metamaker 2.10, DataLogr 1.0, The MDC (Metadata Collector), KMDD (Klamath Metadata Dictionary), Corpsmet95, Data set Cataloger 4.0, Metadata Manager Professional 2.0, Metadata Management System, Metagen32
MS DOS	cns, mp, Corpsmet, Oklahoma metadata creator
Any platform with a Web browser	Metamorph, BIC Metadata Form, Metadata Lite Entry Form, Metadata Validation Service
Any platform with a text editor or a word processor	ASCII templates

MetaMaker

National Biological Information Infrastructure (NBII) has developed a metadata data entry program called "MetaMaker." MetaMaker is a PC-based software tool that makes it possible for users to enter metadata in compliance with the FGDC geospatial metadata standard and the NBII biological profile.

MetaMaker uses a series of data entry screens to help users more easily prepare metadata on their databases or information products. The program includes all the sections and elements of the FGDC geospatial metadata standard as well as all the elements of the NBII biological profile of the FGDC standard.

MetaMaker can be used to collect metadata for biological data and information of all types. MetaMaker can also be used to collect FGDC-compliant metadata for non-biological geospatial data. In addition, the program provides capabilities for printing reports and for connecting to systems capable of serving the metadata on the Internet, for example, as part of the NSDI/NBII Clearinghouse network.

MetaMaker was developed using Microsoft Access, a PC-based database management system. MetaMaker follows the FGDC geospatial metadata standard by color-coding the "Mandatory," "Mandatory if Applicable," and "Optional" sections of the FGDC standard. Many of the fields have pick lists, some with required selections and others with lists of possible selections. Plus, users can build their own pick lists specific to their topics of interest. The program also contains a user manual, the FGDC content standard itself, the NBII biological profile, and the color-coded template. The user manual is available in several formats for downloading from the MetaMaker web site (http://www.emtc.nbs.gov/metamaker/nbiimker.html).